REMARKS

The outstanding Office Action addresses and rejects claims 1-62. Applicant respectfully requests reconsideration of the present application in view of the amendments set forth above and the remarks below.

Independent claim 1 is amended to clarify that the boron free chopped glass fibers contain more than about 10% by weight of aluminum oxide and more than about 20% by weight of calcium oxide. Support for this amendment can be found throughout the specification, for example, at page 10, lines 25-30 and page 23, lines 24-27. Claim 34 is amended to correct a typographical error. Specifically, claim 34 is amended to recite "calcium oxide" rather than "sodium oxide." Support for this amendment can be found throughout the specification, for example, at page 11, lines 1-5. No new matter is added.

Claim Rejections

Rejection Pursuant to 35 U.S.C §102(b)

The Examiner rejects claims 1-5, 8, 10, 25-28, 32 and 39-56 pursuant to 35 U.S.C. §102(b) as being anticipated by Paper 22/97 E. In particular, the Examiner argues that Paper 22/97 E teaches HEPA filter media formed from boron free glass reinforcing fibers and microglass fibers, as recited in claim 1 of the present invention. Applicant respectfully disagrees.

Amended claim 1 is directed to a nonwoven filter media comprising glass wool fibers essentially free of boron and chopped glass fibers essentially free of boron. The chopped glass fibers have more than about 10% by weight of aluminum oxide and more than about 20% by weight of calcium oxide. Paper 22/97 E does not teach or suggest a filter media having chopped glass fibers containing more than about 10% by weight of aluminum oxide and more than about 20% by weight of calcium oxide, much less a filter media formed from such chopped glass fibers mixed with wool glass fibers.

Paper 22/97 E compares the properties of various micro glasses for use in HEPA filters. The glasses disclosed have diameters between 0.1 and 3.0 microns, and therefore these glasses correspond to one component of Applicant's claimed filter media, namely, the glass wool fibers. Paper 22/97 E does not teach the second component of Applicant's filter media, which is the chopped glass fibers. Paper 22/97 E does state that reinforcement fibers, e.g., chopped glass fibers, having a diameter in the range of 6-7 microns are typically used in combination with the microglass fibers. However, the Paper merely states that boron free reinforcement fibers will be available at a later date, and does not discuss the composition of those possible boron free reinforcement fibers. Accordingly, Paper 22/97 E does not teach essentially boron free chopped glass fibers having more than about 10% by weight of aluminum oxide and more than about 20% by weight of calcium oxide, as required by claim 1 of the present invention. Applicant further notes that the boron-free glass wool fiber compositions disclosed in Paper 22/97 E do not contain the recited amounts of calcium oxide and aluminum oxide, and thus there is no suggestion to provide chopped glass fibers having the claimed composition.

Applicant has found that substantially boron free chopped glass fibers with a high aluminum oxide and a high calcium oxide content provides better resistance to humid environments. An investigation of tensile strength over time in humid environments shows that boron free chopped glass with less than about 10% of aluminum oxide and less than about 20% of calcium oxide do not have enough strength. The chopped fibers of the present invention provide a filter media having a strength equivalent to traditional boron containing glass filter materials. (See page 16, lines 4-19; page 23, lines 24-27).

Accordingly, claim 1 is not anticipated by Paper 22/97 E, and therefore represents allowable subject matter. Claims 2-62 are allowable at least because they depend, either directly or indirectly, from allowable base claim 1.

Rejections Pursuant to 35 U.S.C. §103(a)

Claims 6, 7, 9, 11, 12, 18-24, 29-31, 33-38, 57-59 and 60-62 stand rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Paper 22/97 E. Each of these claims depends either

directly or indirectly from claim 1, and for all of the aforementioned reasons, Paper 22/97 E does not teach or suggest the present invention. Claims 6, 7, 9, 11, 12, 18-24, 29-31, 33-38, 57-59 and 60-62 therefore represent allowable subject matter.

Claims 14-17 stand rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Paper 22/97 E in view of U.S. Patent No. 5,156,780 to Kenigsberg et al (Kenigsberg). The Examiner relies on Kenigsberg to teach a filter media containing a water repellent, arguing that it would have been obvious to a person having ordinary skill in the art to modify the filter media of Paper 22/97 E to include the water repellent of Kenigsberg. As stated above, Paper 22/97 E does not teach or suggest the chopped glass fiber composition recited in claim 1. Accordingly, the water repellent of Kenigsberg will not remedy the deficiencies of Paper 22/97 E. Claims 14-17, which depend from claim 1, therefore represent allowable subject matter.

Claim 13 stands rejected pursuant to 35 U.S.C. §103(a) as being unpatentable over Paper 22/97 E in view of U.S. Patent No. 6,155,432 to Wilson et al (Wilson). The Examiner relies on Wilson to teach the use of a binder. Again, Paper 22/97 E does not teach or even suggest the present invention, and thus the binder of Wilson will not remedy the deficiencies of Paper 22/97 E. Claim 13 therefore represents allowable subject matter.

In sum, none of the cited references, either alone or taken together, teaches or even suggests the present invention. The Examiner argues that "it would have been obvious for one of ordinary skill in the art at the time of the invention was made [sic] to have optimized the strength and stability of the glass fiber made from the glass fiber composition by selecting the relative proportion of components through the process of routine experimentation." (Office Action dated July, 30, 2002, page 4.) The Examiner, however, has failed to provide any references which, if combined, would provide the filter media of the present invention. Moreover, the Examiner's argument is based completely on hindsight gleamed from Applicant's specification. The present invention teaches a filter media formed from fibers having a unique composition of material which provides a superior filter media. The Examiner cannot simply use the Applicant's own findings to argue that one of ordinary skill in the art would choose the same composition.

Applicant has provided a novel filter media which clearly distinguishes over the prior art.

Conclusion

In view of the amendments and remarks above, Applicant submits that claims 1-62 are in condition for allowance. Applicants encourage the Examiner to telephone the undersigned in the event that such communication might expedite prosecution of this matter.

Respectfully submitted,

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AMENDED CLAIMS WITH MARKINGS TO SHOW CHANGES MADE

1. (Amended) A nonwoven filter media composite, comprising:

glass wool fibers essentially free of boron; and

chopped glass fibers essentially free of boron, the chopped glass fibers having more than about 10% by weight of aluminum oxide and more than about 20% by weight of calcium oxide, wherein said chopped glass fibers are interspersed throughout said glass wool fibers.

34. (Amended) The filter media composite of claim 33, wherein said chopped glass fibers have between about 21% and about 23% [sodium oxide] calcium oxide by weight.

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